

Work Order ID 123805

August-25-14 10:48:50 AM

123805

PRELIMINARY ISSUE

Page 1 n/a

Item ID: D119-796-241TRN

Accept

N900040100

Setup Start *NS1*

Revision ID: PRELIM

Item Name: Crosstube Turning Detail

Stop *NS2*

Start Date: 8/25/14 Start Qty: 1.00

1

Cust Item ID:



Required Date: 8/25/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

Draw Nbr

Revision Nbr

D119-796-241

AL 14-08-25 29 14.09.02

100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio FB298

2-Turn first side as per Folio FB298

3-Blend transition lines only, **do not sand whole tube**:

FOLIO REV: _____

DWG REV: A

*Use mill bastard file, brush file repeatedly with file card.

*Do not use sandpaper coarser than 320 grit.

110

QC1- Inspect dimensions to dimension sheet

0.00

110

QC

Memo

0.00

Quality Control

*mm 2
14/09/02*

*mm 2
14/02/02*

Work Order ID 123805

August-25-14 10:48:50 AM

123805

Page 2

Item ID: D119-796-241TRN

Accept

N900040100

Setup Start ***NS1***

Revision ID: PRELIM

Stop ***NS2***

Item Name: Crosstube Turning Detail

Start Date: 8/25/14 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 8/25/14 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

120

120

Mori Seiki

Mori Seiki CNC Lathe Large

MORI SEIKI CNC LATHE LARGE

Memo

1-Turn second side as per Folio FB298

2-Blend transition lines only, **do not sand whole tube**:

*Use mill bastard file, brush file repeatedly with file card.

*Do not use sandpaper coarser than 320 grit.

FOLIO REV: _____

DWG REV: A

3-Remove sand and plugs

4- scribe batch # and part # as per dwg

0.00

0.00

0.00

0.00

130

130

QC

Quality Control

QC1- Inspect dimensions to dimension sheet

Memo

1 0
mmL
14/09/04

1 0
mmL
14/09/04

Work Order ID 123805

August-25-14 10:48:50 AM

123805

Page 3

Item ID: D119-796-241TRN

Accept

N900040100

Setup Start

NS1

Revision ID: PRELIM

Stop

NS2

Item Name: Crosstube Turning Detail

Start Date: 8/25/14

Start Qty: 1.00

1

Cust Item ID:

Required Date: 8/25/14

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

QC8- Inspect parts - second check

0.00

140

QC

Memo

0.00

Quality Control

NW *14-09-08*

145

0.00

145

Crosstubes

Memo

0.00

Crosstubes

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

mm *14/09/08*

150

0.00

150

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

BSL/mm *14-09-08*

Work Order ID 123805

123805

Page 4

August-25-14 10:48:50 AM

Item ID: D119-796-241TRN

Accept

N900040100

Setup Start *NS1*

Revision ID: PRELIM

Stop *NS2*

Item Name: Crosstube Turning Detail

Start Date: 8/25/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 8/25/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

DAS

38

9-89

14-9-8

170

Packaging

0.00

170

Packaging

Memo

0.00

Packaging

Identify and stock in kanban rack
Location: _____

BL 14-01-9

180

QC21- Final Inspection - Work Order Release

0.00

180

QC

Memo

0.00

Quality Control

MLJ 14-09-11

MF 14-9-10

Picklist Print

August-25-14 10:48:53 AM

Page 1

Work Order ID: 123805

123805

Parent Item: D119-796-241TRN

D119-796-241TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 8/25/14

Required Date: 8/25/14

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV A RQ 14/05/27 VERIFIED BY DD

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| D6009-129 | | Manufactured | No | | | 100 | Each | 42.5000 | 1 | 1 | | | |

D6009-129

Crosstube Material

Location

Loc Qty

Loc Code

LG003

42.5

107864

38.5

75627

3

75648

1

_____ *mm 14/08/27*

POSITIVE RECALL

EFFECTIVE 14-08-25 **AUTH** *[Signature]*

RELEASED _____ **DATE** _____

RQ. N/A

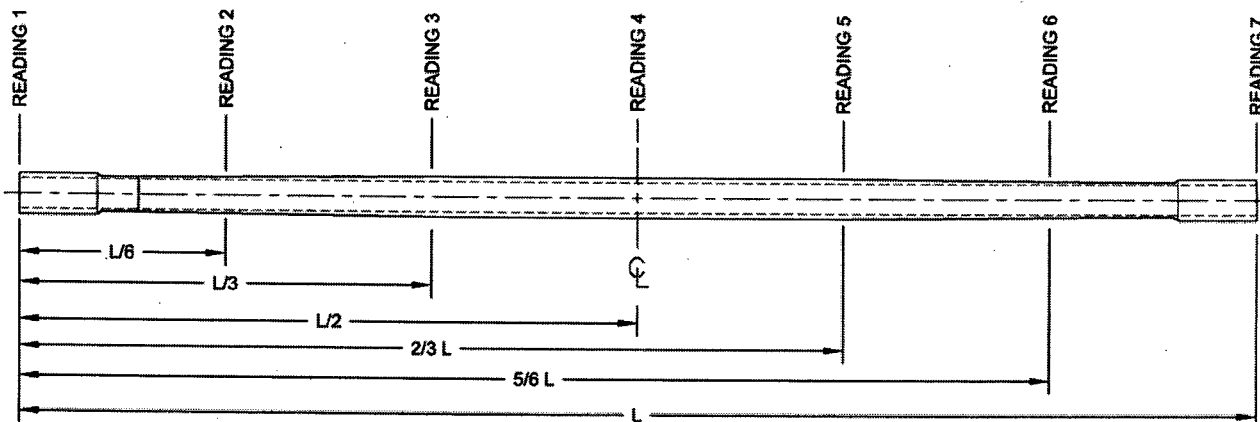
| | | |
|---|--|----------------------------------|
| DART AEROSPACE LTD | | Work Order: 123 805 |
| Description: Crosstube Assembly | | Part Number: D119-796-241 |
| Inspection Dwg: D119-796-24/Rev: A | | Page 1 of 2 |

FIRST ARTICLE INSPECTION CHECKLIST

| Inspection Sheet | Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|------------------|-------------------|-------------|------------------|--------|--------|----------------------|----------|
| SIDE A | | | | | | | |
| | | | | | | | |
| | 2.516 | ± 0.005 | 2.519 | ✓ | | vern | CNC-08 |
| | 2.516 | ± 0.005 | 2.519 | ✓ | | | |
| | 2.626 | ± 0.005 | 2.628 | ✓ | | | |
| | 2.627 | ± 0.005 | 2.631 | ✓ | | | |
| | 2.798 | ± 0.005 | 2.800 | ✓ | | | |
| | 2.799 | ± 0.005 | 2.802 | ✓ | | | |
| | 2.989 | ± 0.005 | 2.994 | ✓ | | | |
| | 3.200 | ± 0.005 | 3.203 | ✓ | | | |
| | 3.191 | ± 0.005 | 3.196 | ✓ | | ↓ | |
| SIDE B | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | 2.516 | ± 0.005 | 2.519 | ✓ | | vern | CNC-08 |
| | 2.516 | ± 0.005 | 2.519 | ✓ | | | |
| | 2.626 | ± 0.005 | 2.628 | ✓ | | | |
| | 2.627 | ± 0.005 | 2.631 | ✓ | | | |
| | 2.798 | ± 0.005 | 2.800 | ✓ | | | |
| | 2.799 | ± 0.005 | 2.802 | ✓ | | | |
| | 2.989 | ± 0.005 | 2.991 | ✓ | | | |
| | 3.200 | ± 0.005 | 3.202 | ✓ | | | |
| | 3.191 | ± 0.005 | 3.194 | ✓ | | ↓ | |
| | 105.71 | ± 0.020 | 105.730 | ✓ | | type | LG-11 |

| | | |
|--|-------------|---------------------------|
| DART AEROSPACE LTD | | Work Order: 123805 |
| Description: Crosstube Assembly | | Part Number: |
| Inspection Dwg: | Rev: | Page 2 of 2 |

WALL THICKNESS MEASUREMENT



| Location | WALL THICKNESS MEASUREMENT (IN) | | | | Deviation Δw (max-min) | TOLERANCE |
|---------------------|---------------------------------|------|------|------|--------------------------------------|-----------|
| | w1 | w2 | w3 | w4 | | |
| READING 1 L= 0" | .147 | .154 | .164 | .155 | .017 | |
| READING 2 L= 17 | .197 | .209 | .206 | .246 | .059 | |
| READING 3 L= 35 | .301 | .378 | .355 | .343 | .054 | |
| READING 4 L= 52 | .486 | .494 | .566 | .497 | .018 | |
| READING 5 L= 69 | .323 | .349 | .355 | .329 | .032 | |
| READING 6 L= 87 | .220 | .248 | .253 | .233 | .033 | |
| READING 7 L= 105 | .144 | .152 | .162 | .150 | .018 | |

Calibration Result

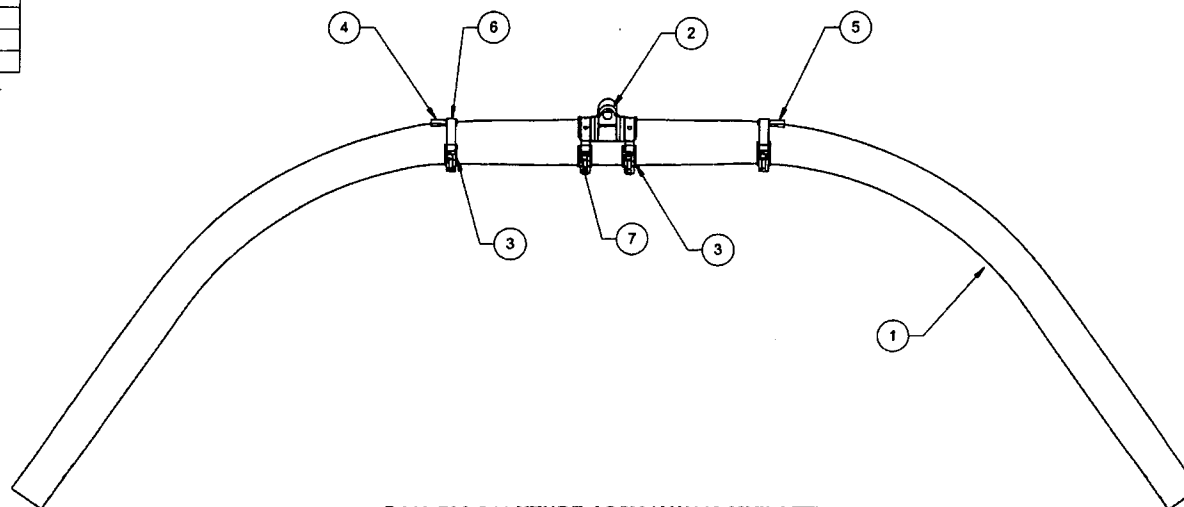
Actual Block Thickness: .100 .750

Sitescan 250 Measured Thickness: .100 .750

| | | |
|---|---|--|
| Measured by: <i>gmm</i> Date: 14/09/08 | Audited by: <i>JW</i> Date: 14-09-08 | Preliminary Approval: Date: |
|---|---|--|

| Rev | Date | Change | Revised by | Approved |
|-----|----------|----------------------------|------------|----------|
| B | 10.04.14 | Added preliminary approval | KJ | |
| C | 12.06.01 | Wall thickness form added | KJ | |

| ITEM | QTY -241 | P/N | DESCRIPTION |
|------|-------------|-----------------|-----------------------------|
| | X | D119-796-241 | XTUBE ASSY (AW119 MKII AFT) |
| 1 | 1 | D119-796-241BND | CROSSTUBE, AFT |
| 2 | 1 | D5122-1 | CENTER SUPPORT |
| 3 | 4 | D5123-1 | CLAMP CUSHION |
| 4 | 1 | D5136-1 | CONTACT PAD, LH |
| 5 | 1 | D5136-2 | CONTACT PAD, RH |
| 6 | 2 | MS21920-25 | CLAMP |
| 7 | 2 | MS21920-28 | CLAMP |



D119-796-241 XTUBE ASSY (AW119 MKII AFT)

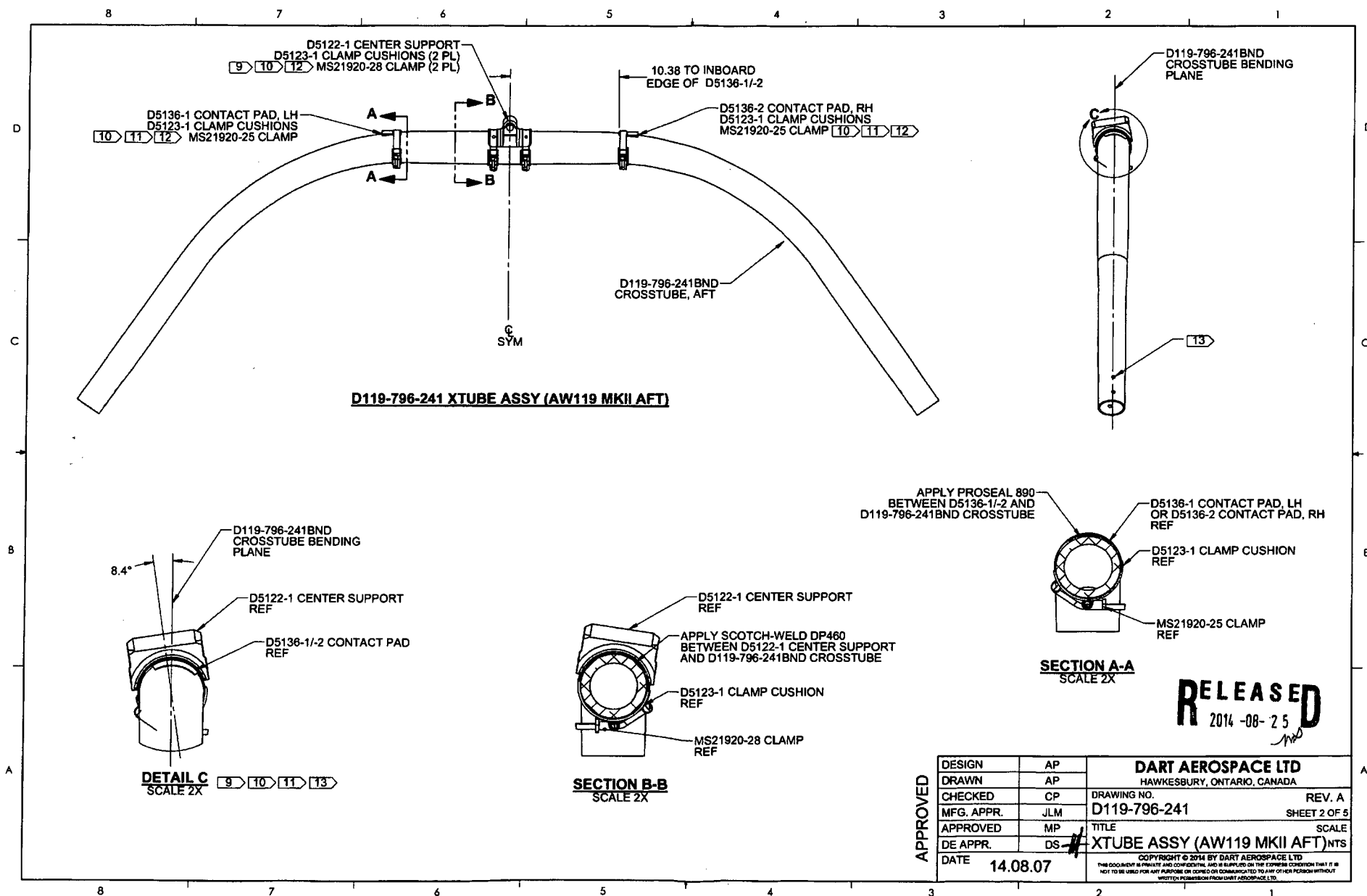
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-241" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 8.4
- 7) WEIGHT: 26.26 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) INSTALL D5122-1 CENTER SUPPORT AT 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP480 PER QSI 015. ENSURE OFFSET IS AS PER NOTE 13.
- 10) INSTALL MS21920 CLAMPS USING D5123-1 CLAMP CUSHIONS OFFSET AT 8.4" FROM CROSSTUBE BENDING PLANE. ENSURE THAT THE CLAMP TIGHTENING MECHANISM IS AT 90° TO THE CROSSTUBE BENDING PLANE AND THE NUTS FACE AFT.
- 11) APPLY A THIN LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5136-1/2 CONTACT PADS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL MS21920-25 CLAMPS AND D5123-1 CLAMP CUSHIONS WHILE WET. ENSURE OFFSET IS AS PER NOTE 13.
- 12) TORQUE MS21920 CLAMPS 80 - 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 13) THE D5122-1 CENTER SUPPORT, D5123-1 CLAMP SUPPORTS AND D5136-1/2 CONTACT PADS MUST ALL BE ORIENTED AT 8.4° TO THE CROSSTUBE BENDING PLANE. THE DIRECTION OF THE OFFSET IS DIRECTLY RELATED TO THE CUFF THRU HOLES. REFER TO SHEET 2 FOR DETAILS.

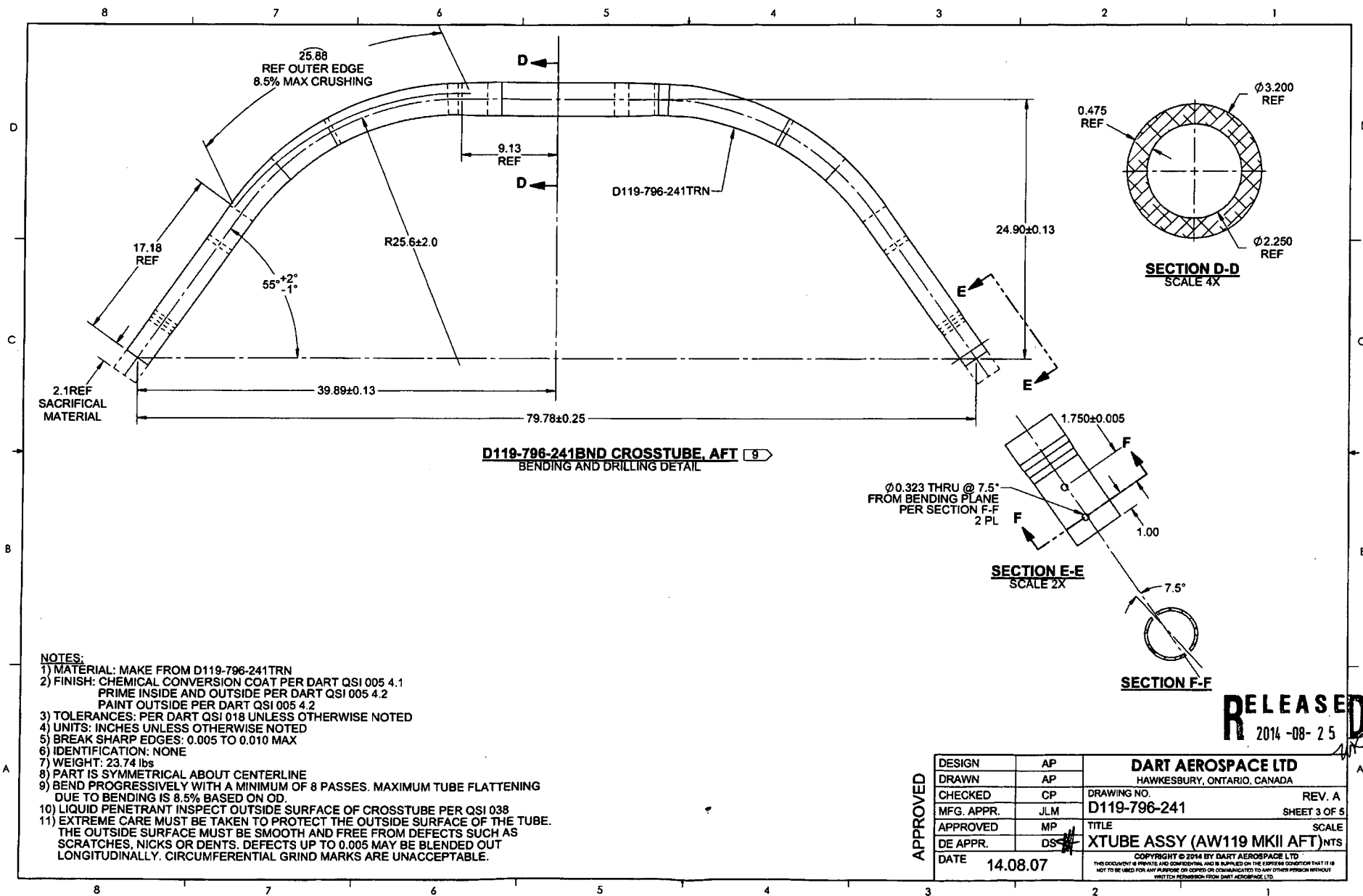
RELEASED
2014-08-25

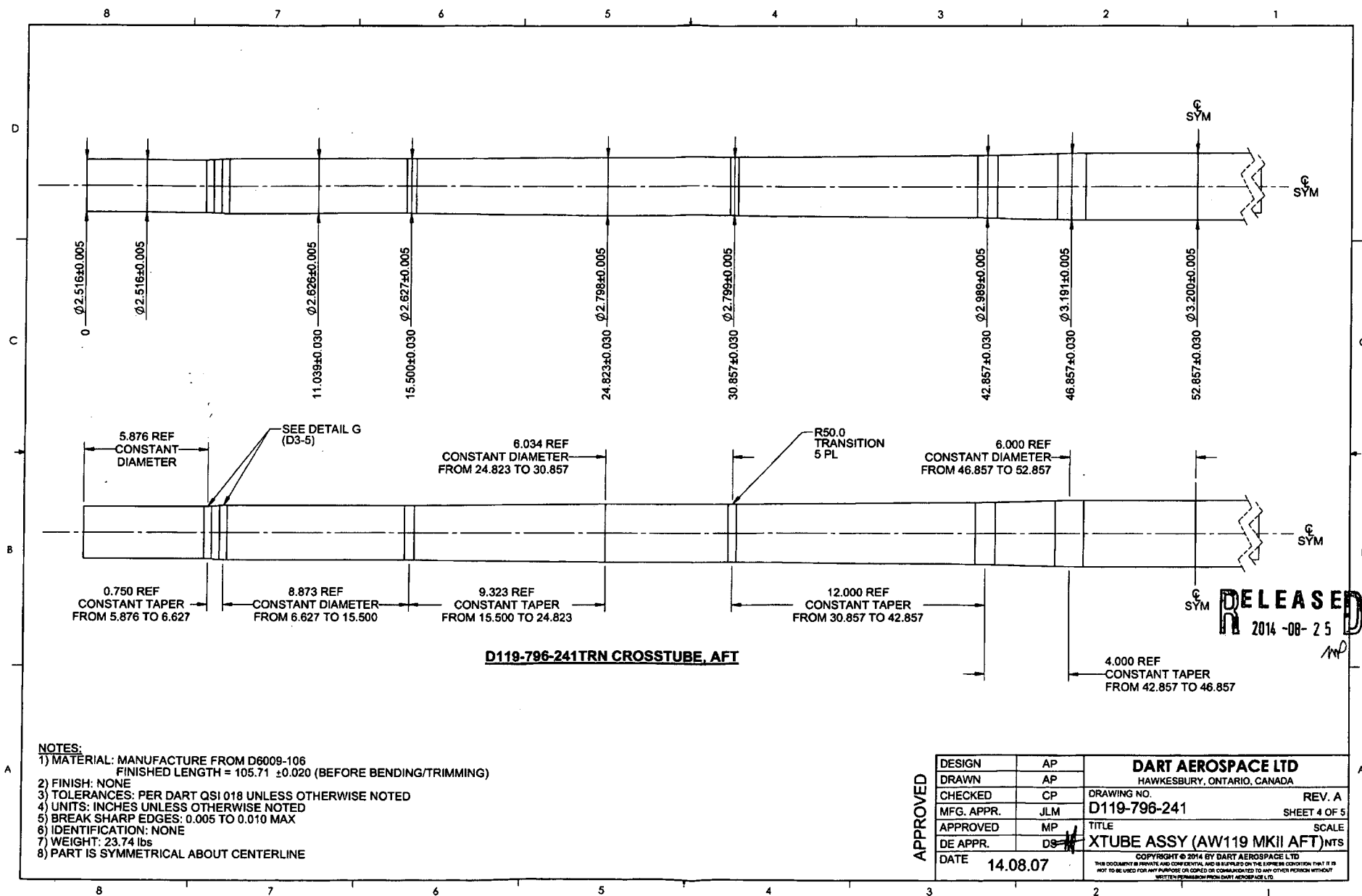
| | | | |
|-------------|-------------|--|--------------|
| A NEW ISSUE | | AP | 14.08.07 |
| REV. | DESCRIPTION | | BY DATE |
| DESIGN | AP | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | AP | | |
| CHECKED | CP | DRAWING NO. | REV. A |
| MFG. APPR. | JLM | D119-796-241 | SHEET 1 OF 5 |
| APPROVED | MP | TITLE | SCALE |
| DE APPR. | DS | XTUBE ASSY (AW119 MKII AFT) NTS | |
| DATE | 14.08.07 | COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. | |

APPROVED



| | | | | |
|----------|------------|----------|--|--------------|
| APPROVED | DESIGN | AP | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| | DRAWN | AP | | |
| | CHECKED | CP | DRAWING NO. | REV. A |
| | MFG. APPR. | JLM | D119-796-241 | SHEET 2 OF 5 |
| | APPROVED | MP | TITLE | SCALE |
| | DE APPR. | DS | XTUBE ASSY (AW119 MKII AFT) | NTS |
| | DATE | 14.08.07 | COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. | |





NOTES:

- 1) MATERIAL: MANUFACTURE FROM D6009-106
FINISHED LENGTH = 105.71 ±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 23.74 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE

APPROVED

| | | | |
|------------|----------|--|--------------|
| DESIGN | AP | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | AP | | |
| CHECKED | CP | DRAWING NO. | REV. A |
| MFG. APPR. | JLM | D119-796-241 | SHEET 4 OF 5 |
| APPROVED | MP | TITLE | SCALE |
| DE APPR. | DS | XTUBE ASSY (AW119 MKII AFT) | NTS |
| DATE | 14.08.07 | COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. | |

